Remarks

Applicants provide the following additional remarks in view of a recent Office Action mailed June 10, 2008. In particular, Applicants refer the Examiner to Applicants' as-filed specification, which includes paragraphs [0051], [0052] and [0053]. In [0051], Applicants describe a process in at least one embodiment that includes a method that "models the aliasing effects" illustrated in FIG. 2 and described in para. [0049] and previously encountered by others: "the normalised correlation approach generates both random and structured, or systematic, errors due to the *aliasing* effects." By the process described with para. [0051], Applicants have found a process that "models the aliasing effects" on the appearance of the feature as it translates across the image. Said process includes moving the feature relative to the pixels (e.g., resampling) to make it look more like an NGC reference feature, which in turn, models the effects aliasing has on the appearance of the feature as it translates across the image. Paragraph [0051] further describes a resampling process, which is disclosed additionally in paragraphs [0052] and [0053]. It is noted that in Applicants' previous response dated November 10, 2008, Applicants pointed to paragraphs [0052] and [0053] as supporting the amended language of Claim 61. Applicants wish to clarify that the Examiner should look to paragraph [0051] for support of the amended and new claims provided in the Amendment dated November 10, 2008.

When considering paragraph [0051], Applicants point out the following section for illustrating what is further described below:

> [0051]. . . The resampled pixels will now look more like the reference feature as the resampling process approximately models the aliasing effects illustrated in Figure 2. That is to say, by shifting each pixel by a fractional part of a pixel, each pixel has either a greyscale value closer to black or white or where the greyscale value was already black or white it remains so. The correlation function is then re-evaluated at the best matched position and its N surrounding neighbours and the sub-pixel position recalculated, using the standard NGC technique. The fractional part (DX, DY) of the original sub-pixel position estimate is added to the re-evaluated best matched position to give a refined sub-pixel estimate. This procedure may be iterated a number of times to further refine the sub-pixel estimate.

Paragraph [0051] provides the following information about at least one embodiment of

the resampling process: the process includes evaluation a correlation function at a best matched position and its N surrounding neighbors to obtain coordinates of the feature to within a fraction of a pixel (may be implemented using known measures and will, in one form, estimate coordinates that may differ from the actual coordinates by an error factor, referred to as "E"). In addition, the process of at least one embodiment includes moving the feature described in the last sentence, moving is *relative to the pixels* and by the fractional portion of the x value and y value of the estimated coordinates (which may alternatively be achieved by moving the feature *relative to the pixels* by 1-[pixel fraction]). Moving the features as just described may also be expressed as resampling the feature relative to the pixels. The resampled pixels will look more like the reference feature as the resampling process approximately models the aliasing effects. Moreover, the process of at least one embodiment includes re-evaluating the correlation function at the best matched position and its N surrounding neighbors to generate a generally more accurate set of coordinates (which may differ from the actual translated coordinates by an error factor less than E, for example E/4). And, the process of at least one embodiment includes summing the pixel coordinates to refine the initial estimate (and using the example previously described, the initial estimate would have an error factor of 3E/4).

Considering the above, it clear that U.S. Patent No. 6,483,538 (hereinafter "Hu") does not describe anything about aliasing nor does the reference offer any solution. Hu relies specifically on a "test block" that is overlayed on each image to try to align a feature in a test image with a feature in a reference image. According to Hu, a feature is present in an image (see Col. 2, ll. 50-51) and an image has pixels (see Col. 3, ll. 3-4). The test block of Hu, on the one hand, is movable relative to, on the other hand, both the test image and thus also the feature present in the test image. This is an important distinction. Consequently, shifting the test block will not have an effect on the appearance of the feature within the test image as it does not move the feature relative to the pixels of the test image. Accordingly, Hu cannot model the effects aliasing has on the appearance of the feature in the test image. As such, Applicants submits that the claims are not described explicitly or implicitly in any of the cited documents, including Hu.

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Conclusion

In light of the additional remarks presented with this paper, Applicants respectfully submit that claims submitted in an Amendment dated November 10, 2008, are in condition for allowance. Accordingly, favorable consideration for and allowance of such claims are respectfully requested.

Should the Examiner have any questions or comments, or if further clarification is required, it is requested that the Examiner contact the undersigned at the telephone number listed below.

Dated: December 9, 2008

Respectfully submitted,

GARDERE WYNNE SEWELL LLP

By: _Monique A. Vander Molen_
   Monique A. Vander Molen
   Registration No.: 53,716

Address for Correspondence:

Customer No. 32914

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